XENIX® System V

Operating System

Installation Guide

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Chapter 1

Introduction

1.1 Overview

This is a guide to installing XENIX on your personal computer. Setting up user accounts and peripheral devices is also discussed.

Topics covered in this guide include:

- How the system is distributed in three packages and what each contains.

- Responding to system prompts in the installation procedure.

- What you need to get started.

- Starting the system for the first time.

- Preparing the hard disk for XENIX.

- Starting the system from the hard disk.

- Setting up user accounts.

- Using a second operating system (DOS) with XENIX.

- Adding device drivers to your system.

1.2 Using This Guide

This guide contains the following sections:

Chapter 1: Introduction
> This chapter gives an introduction and overview of topics covered in this guide.

Chapter 2: Installation Procedure
> A step by step guide to installing XENIX on your computer. Starting XENIX for the first time, initializing the hard disk, and setting up user accounts are among the topics discussed.

Chapter 3: Using DOS and XENIX on the Same Disk
> How to use both the XENIX and DOS systems. Includes a description of the fdisk(C) utility used to partition the hard disk for concurrent use of both systems.

Chapter 4: Installing Device Drivers
> Using the Link Kit to install device drivers for additional peripheral devices is described.

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Chapter 2

Installation Procedure

2.1 Overview

This guide explains how to install the XENIX system on a personal computer. The XENIX Operating System is a powerful system of programs that gives your computer the same multi-user, multi-tasking capabilities as many large and expensive computers.

When you install the system, you:

- Initialize the hard disk, then;

- Copy the XENIX utilities from the XENIX distribution media to the initialized hard disk.

2.2 XENIX System Distribution

The complete XENIX System consists of the following three distribution sets:

- The Operating System

- The Development System

- The Text Processing System

The Operating System contains the XENIX programs you need to create multiple user accounts, manage file systems, create and manage files and perform system maintenance tasks.

The Development System contains the XENIX programs you need to create, compile, and debug assembly and high-level language programs.

The Text Processing System contains the XENIX programs you need to create, edit, and typeset documents.

2.3 How To Use This Guide

Read through this guide thoroughly before beginning the installation procedure so that you become familiar with the various steps and terminology used in each section. If you run into difficulties during the installation, call the Support Center listed on the support information card included with the software.

Always follow these rules:

1.   During the installation you use the keyboard to enter information. Always:

     ● Begin each command after a prompt (often a $, % or # symbol). During the installation process, the prompt can be "<Installation>," under certain conditions.

     ● Enter all requested names and numbers exactly as shown.

     ● Complete a line by pressing the RETURN key.

       NOTE: The RETURN key is sometimes denoted on the keyboard by a "down–left" arrow, or referred to as the ENTER key.

2.   If you make an entering error, you can erase the character:

     ● By using the backspace key,

            OR

     ● By pressing Ctrl–h.

     ● To delete everything you have entered on a line, press Ctrl–u.

3.   Some additional items to be aware of:

     ● (y/n)? is asking "yes or no?", and always requires a response from you (type "y" or "n" and press the RETURN key).

     ● The control symbol (^) refers to the Ctrl key, and is followed by another key which, used in combination with the Ctrl key, has a special meaning.

            Example: ^h means backspace

       Press the Ctrl key and the other key at the same time. This is the same action as using the Shift key.

     ● The RETURN key on your keyboard may have a large single arrow pointing down and left (or the word ENTER) on it rather than the word "return." In this guide, however, it is written this way:

            RETURN

- Commands referred to in text are shown in boldface with the reference manual section next to the command in parentheses (for example cat(C)). Refer to the preface of the XENIX *User's Reference* for a guide to the various reference sections.

2.4 Before You Start

Before you begin the installation procedure, make sure your computer is fully assembled (and operational) and you are familiar with its operation. In particular you should know:

- How to turn the computer off and on.

- How to insert floppies into the floppy drive.

- How to reset the computer.

If you have just assembled your computer for the first time or are unsure about the items listed above, briefly review the hardware manuals provided with your computer and hard disk. The hard disk must be connected to your computer according to manufacturer's specifications. Also, we suggest you run a system self-test as described in the computer's *Operator's Guide* in order to detect possible hardware problems.

Other items to be aware of:

- Make sure the FILESYSTEM (N2) floppy is not write protected. High density 96tpi distributions have a single BOOT/FILESYSTEM floppy (N1) that should not be write protected

- Copy the BOOT and FILESYSTEM floppies (N1 and N2) as soon as you can, then put the originals in a safe place and use the copies. Any floppy can fail with frequent use, so it is a good idea to back-up all your volumes, but especially these first, crucial floppies.

  Use the MS-DOS™ floppy copy routine diskcopy to make backups, before installing XENIX. If you cannot use the DOS routine, you can copy the floppies with the XENIX diskcp(C) command once you have installed the XENIX System. For more information on diskcp, see the XENIX *User's Reference*.

- If you are upgrading from XENIX 3.0 to XENIX System V, be sure to follow the upgrade procedure as outlined in the XENIX *Operating System Release Notes*.

2.5 Installation Procedure

2.5.1 Overview

The installation procedure has six steps:

1. Start XENIX from the BOOT Floppy (volume N1).

2. Initialize the hard disk with the hdinit(C) program and, if desired, modify the hard disk partition table to share space with the DOS operating system.

3. Re-start the system from the newly initialized hard disk.

4. Copy the XENIX utilities onto the hard disk.

5. Create the super-user password.

6. Create the first user account.

The following sections describe each step. After you complete the installation, be sure to store this guide and the distribution floppies in a safe place. You will need them again if you wish to reinstall the system for any reason.

2.5.2 What You Need

To install the XENIX System you need:

- A personal computer with at least 384K bytes of memory.

- One hard disk with at least 10 megabytes of storage.

- One double-sided floppy drive.

- The XENIX System distribution floppy disks.

- A Serial Number (an alphanumeric code printed on the Serialization Card).

- An activation key (an alphabetic code printed on the Serialization Card).

The XENIX System distribution set contains these floppies:

- The XENIX Operating System floppies. The *Release Notes* delivered with this guide contain a list of the number of floppies in each set and the software packages contained in the Operating System.

- Optional: Development System floppies. The *Release Notes* delivered with the *Programmer's Guide* contain a list of the software packages contained in the Development System.

- Optional: Text Processing System floppies. The *Release Notes* delivered with the *Text Processing Guide* contain a list of the software packages contained in the Text Processing System.

2.5.3 Starting XENIX From The Boot Floppy Set

You are ready to start the actual installation process. Find the distribution disks labeled "BOOT" (N1) and "FILESYSTEM" (N2).

Note

If your XENIX distribution is on high density, 96tpi floppies, there is only one BOOT/FILESYSTEM floppy. Throughout the installation procedure, all references to the BOOT and FILESYSTEM floppies refer to the single BOOT/FILESYSTEM floppy.

Follow these steps:

1. Insert the BOOT floppy into the drive. If you have more than one floppy drive, use the primary drive. It is sometimes called the boot drive. Check your computer hardware manual if you are not sure which drive is the primary drive.

2. Turn on your computer and the hard disk.

   The computer loads the XENIX bootstrap program from the floppy disk and begins to execute it. In the upper left corner of the screen, the computer may display the total amount of memory installed. Next, you see:

   XENIX System V

   Boot
   :

Press RETURN to boot from the floppy drive. You see the default floppy boot, which looks something like this:

    fd(4,0)xenix

Then the system performs a self-check to determine if there are any problems with the hardware. The letters A-H appear in succession.

After XENIX is loaded in memory, the system displays information about how memory is allocated. You also see the number of multiscreens™ available on your system (see multiscreen(M) for more information on multiscreens). The number of multiscreens depends upon the amount of memory your computer has.

3. You see the prompt:

    Insert filesystem floppy and press <RETURN>

    Remove the BOOT floppy (N1) and insert the FILESYSTEM floppy (N2). If you have only one BOOT/FILESYSTEM floppy, leave it in the drive. Press:

    RETURN

4. The remaining letters of the alphabet are displayed. After Z, the message appears:

        No single-user login present
        Entering System Maintenance Mode

    If the letters stop displaying before the letter "Z" is reached, run hardware diagnostics as explained in your computer manual, correct any identified problems and start the installation procedure again from the beginning. If the letters stop again, call the Support Center listed on the support information card and be prepared to tell them at what letter the display ended.

    The self-check using letters A-Z occurs every time you bring up your XENIX system. However, after this initial installation, the self-check does not display messages referring to the FILESYSTEM floppy (N2). Once the system begins to run, the following message is displayed:

        XENIX System V Hard Disk Initialization

    When you see this message, you are ready to proceed with the second installation step, *Initializing The Hard Disk*.

2.5.4 Initializing The Hard Disk

As part of the initialization process, you may partition the hard disk, using the fdisk(C) utility, to support both DOS and XENIX on the same hard disk, or you can allow XENIX to use the whole disk.

The following steps describe how to initialize the hard disk.

1. You see the message:

    During installation you may choose to overwrite all
    or part of the present contents of your hard disk.
    Do you wish to continue? (y/n)

Note

If you have any files on the hard disk that you wish to save before
installing XENIX follow this procedure. Enter:

    n

and press RETURN.

The following message appears:

    Aborting initialization procedure

At this point, the system shuts down automatically, as the following
message is displayed on the screen:

    ** Normal System Shutdown **

    **   Safe to Power Off   **
                 – or –
    ** Hit Any Key to Reboot **

Remove the floppy, and reboot your existing operating system
(DOS). After you have backed up the files you want to save, restart
the XENIX installation procedure from the beginning.

Back up files that reside on partitions that you are going to overwrite.
Creating a new partition on an unused portion of the hard disk will
not overwrite files on another partition. It is not necessary to back up
files that reside on an existing partition you are not changing.

Note

If you wish to partition the disk so that you can use another operating system in addition to XENIX, do not follow the fdisk steps shown here. Instead, see Chapter 3 of this *Installation Guide* and the fdisk(C) manual page in the XENIX *User's Reference*.

Install DOS on the hard disk before installing XENIX. Installing DOS after XENIX, in some circumstances, changes the fdisk table and makes the XENIX partition unbootable. If this happens, you must recreate the fdisk table. Note that DOS fdisk reports disk size in cylinders, XENIX fdisk reports disk size in tracks.

After you set up the desired partitions with fdisk, return to the next part of this installation procedure.

If you are only using XENIX on your hard disk, continue with the following steps.

---

2. If you do not have any files you want to save, enter

   y

   and press RETURN.

   The **hdinit** program invokes fdisk(C), which partitions the hard disk.

3. After a moment, an fdisk menu appears on the screen. You see this option list:

   Select one of the following options or 'q' to exit the program

   1. Display Partition Table
   2. Use Entire Disk for XENIX
   3. Create XENIX Partition
   4. Activate Partition
   5. Delete XENIX Partition

   Please enter your choice:

Enter option "2" and press RETURN.

If you have never installed an operating system on your disk, you see a table similar to this:

Current Hard Disk Drive: /dev/rhd00

Partition	Status	Type	Start	End	Size
1	Active	XENIX	1	1219	1219

Total disk size: 1220 tracks

Press <RETURN> to continue

Note

If you have previously installed an operating system on your disk, you see a table that might look something like this:

Current Hard Disk Drive: /dev/rhd00

Partition	Status	Type	Start	End	Size
1	Active	UNKNOWN	1	1219	1219

Total disk size: 1220 tracks

Warning! All data on your disk will be lost!
Do you wish to continue? (y/n)

If you would like XENIX to occupy the whole disk, enter 'y' and press RETURN.

Even if you have already installed XENIX, and are just reinstalling the system, you should enter 'y' and press RETURN at this point if you want XENIX to occupy the whole disk. This insures that fdisk partitions the whole disk for XENIX.

Note that the track numbers and size of your disk may vary from this example.

Press RETURN, and you see the main fdisk menu. You have now set up the partition(s) to use XENIX on your hard disk. To continue with the next step in the installation procedure, enter:

q

and press RETURN.

4. Now you see a menu from the program badtrk(C). With the badtrk program, you can scan your hard disk for defective tracks. The program maps any flaw locations to other, good tracks. It also creates a flaw map, which is a list of all the bad tracks on your hard disk.

The main program menu looks like this:

Select one of the following options or 'q' to exit program:

1. Print Current Bad Track Table
2. Scan Media Surface for Possible Bad Spots
3. Create New Bad Track Table
4. Add Entries to Current Bad Track Table by Head/Cylinder #
5. Add Entries to Current Bad Track Table by Sector Number
6. Delete Entries from Current Bad Track Table

Please enter your choice:

If you have never scanned your disk for bad tracks, enter:

2

and press RETURN. The badtrk program scans the hard disk for possible flaws. The scanning process takes roughly one to two minutes per megabyte of storage on the disk.

As the program scans the disk, it displays the number of each track it examines. Whenever it finds a defective track, it lists the location of that track using both the sector number and cylinder/head conventions. Defective track information is entered into the table and displayed on the screen. An example bad track might be:

error on dev Fixed Disk (0/47), block=12954 cmd=0003 status=0018
sector = 12971, cylinder/head = 190/3

When the scan is complete, the menu reappears. Enter option "1" to see the results of the scan. Your bad track table might look like this:

Defective Tracks

	Cylinder	Head	Sector Number(s)
1.	190	3	12971–12987

Press <RETURN> to continue

Note

If there is a flaw in the first few tracks of the XENIX partition, you are returned to the fdisk utility (see the previous installation step). Repartition the disk with fdisk so that the XENIX partition no longer includes the defective tracks. You will have to experiment to determine how many tracks to exclude. Leave these defective tracks unassigned to any operating system. When you leave fdisk, badtrk runs again. Scan the disk for flaws.

This process continues until badtrk finds no flaws in the first few tracks.

Press RETURN to return to the main menu. If your disk comes with a flaw map, you should enter any flaws from it into the badtrk table. This procedure is described below.

Some disks are not furnished with a flaw map. If this is the case with your disk, enter:

q

to leave badtrk. If you have no bad tracks, or made no changes to the bad track table, skip to the next step (5) on divvy(C).

If you created a new bad track table, or altered an existing one, the program prompts:

Do you want to update this device with the new table? (y/n)

Enter:

y

If there are defective tracks, you are prompted:

> Do you want to attempt to salvage any valid data
> on the bad tracks? [may take a long time] (y/n)

Enter 'n'. When **badtrk** finishes, continue the installation procedure.

If your disk is not furnished with a flaw map, skip to step "5" and proceed with the **divvy(C)** utility.

If your disk does come with a flaw map, proceed with the next steps to enter any defective tracks which are not already indicated in the **badtrk** flaw table.

Because most disk flaws are marginal or intermittent, your disk's flaw map will probably list more bad tracks than the scanning process reveals. If so, you should now add these defective tracks to the **badtrk** flaw table.

Select either option "4" or option "5" depending upon the format of the flaw map furnished with your disk. Enter the defective tracks, one per line. If you make a mistake, enter:

> q

and press RETURN. When you see the main **badtrk** menu, enter option "6" to delete a track.

When you are finished making changes to the flaw table, enter:

> q

and press RETURN to return to the main menu. At the main **badtrk** menu, enter:

> q

again and press RETURN. **badtrk** prompts:

> Do you want to update this device with the new table?

Enter:

y.

and press RETURN to save the changes. You are prompted:

Do you want to attempt to salvage any valid data
on the bad tracks? [may take a long time] (y/n)

Answer 'y' or 'n'.

5. You now see several prompts from the divvy(C) utility. This program allocates portions of your partitioned disk for the *root* and *swap* areas.

It also allocates a small portion of the disk for a *recover* area that is used during autoboot. The fsck(C) program uses this *recover* area to place output when the *root* device is cleaned.

If you create a very large root filesystem you are asked if you want to create an additional, small portion of the disk as scratch space for fsck. fsck uses the scratch space for temporary storage when cleaning very large filesystems. You should make a scratch filesystem if you have a very large *root* filesystem, since this makes booting XENIX much easier.

After that, divvy prompts:

There are 10098 blocks in the XENIX area.
Between 1000 and 2000 blocks should be reserved for the swap area.

Please enter the swap-space allocation, or press <RETURN>
to get the default allocation of 1250 blocks:

The actual numbers in this prompt vary depending upon the size of your disk. If you do not specify the number of blocks of swap area you want, you are automatically given a default amount. This default is minimal. Due to the difficulty in increasing your swap area, it is recommended that you ask for the upper limit amount shown by the divvy(C) program, if you are planning to use large applications (like databases or spreadsheet programs), use the software development set extensively, or make many programs "sticky" for performance reasons. If you plan to install the Development System, enter a swap-area allocation that is approximately 500 blocks larger than the default. Enter:

RETURN

for the default values.

If your disk is larger than 20M bytes, you see the prompt:

Do you want a separate /u filesystem? (y/n)

We recommend that you have a separate filesystem with disks larger than 20M bytes, especially if you anticipate having many, active users. You should leave at least 15M bytes for the *root* filesystem.

You can call this separate filesystem anything you want, and, if desired, you can change the name later. The name should be different from any other directory or filesystem. We recommend that you use the name /u. For more information on using a /u filesystem, see Chapter 7 of the XENIX *Operations Guide*, "Using Peripheral Devices." That chapter describes adding a second hard disk (and filesystem), but the discussion of a second filesystem applies here.

If you have enough storage for a separate user filesystem, and want to create one, enter:

y

and press RETURN.

Note

If you create a /u filesystem enter this command after you finish installing the XENIX system and are in System Maintenance Mode:

mkdev fs /dev/u /u

Next, you see:

Do you require block-by-block control over the layout of the XENIX partition? (y/n)

If you are installing XENIX for the first time, enter:

n

and press RETURN. Block–by–block control means you can choose the exact size of filesystems and the swap area to fit your needs. Most users do not need this kind of precise control, so answering 'n' at this prompt causes divvy to use default settings based on the size of your hard disk.

If you answer 'y' you see a table from the divvy program. Refer to divvy(C) in the *User's Reference* for more information.

6. The system now loads a rudimentary XENIX file system onto your hard disk. This takes several minutes. You see the message:

    Making filesystems

When the **hdinit** program is finished, the system shuts down and displays instructions on booting the newly initialized hard disk. Make note of these instructions. You then see:

    ** Normal System Shutdown **

    **   Safe to Power Off   **
                 – or –
    ** Hit Any Key to Reboot **

Remove the FILESYSTEM floppy, and insert the BOOT floppy (N1) into the drive. If you have a single BOOT/FILESYSTEM floppy, leave it in the drive. Press any key to reboot the system.

If you want to add a second hard disk, finish the installation procedure. Then refer to Chapter 7 of the XENIX *Operations Guide*, "Using Peripheral Devices."

2.5.5 Starting XENIX On the Hard Disk

This section explains how to start the XENIX system using the hard disk.

1. After you see the boot prompt

    Boot
    :

type:

    xenix rootdev=hd(40,0)

and press RETURN. You see some copyright information, and information about the memory configuration of your system.

As before, the system performs a self-check to determine where any problems exist with the hardware. The letters A–Z appear successively on screen. If the letters displaying stop before the letter "Z" is reached, run hardware diagnostics as explained in your computer manual. Correct any identified problems and start the XENIX installation procedure again.

If the letters stop at this point, call the Support Center listed on the support information card and be prepared to tell them the last letter displayed.

2. Now the program fsck(C) is run. fsck checks the filesystem(s) on your hard disk.

If you have a very large *root* filesystem, you are prompted for a scratch filesystem name at this first boot up. If you created a scratch filesystem with divvy, enter:

/dev/scratch

This is the only time you have to enter a scratch filesystem name if you have a large filesystem and specified a scratch filesystem with divvy.

If you have a large filesystem, but do not specify a scratch filesystem with divvy, you must enter the name of a scratch filesystem that is not on the filesystem being checked, every time you boot your system. An example scratch filesystem in this case is a blank, formatted floppy:

/dev/fd0

3. When fsck finishes, you are prompted to make sure the BOOT (N1) floppy is in the drive. You see the following:

Verify Operating System (Installation)volume N1 is inserted and press <RETURN>

4. After this, follow any additional screen prompts for floppies. Note that you may not be prompted to insert all the volumes in your distribution at this time.

For example, the Link Kit is on one of your volumes and it is not installed at this time. You can install the Link Kit later in this procedure.

If you insert a floppy in the wrong order, you see this prompt:

Error: incorrect volume in drive!

Remove the floppy from the drive, insert the correct volume, and press RETURN.

If there is an error with the extraction procedure, such as a floppy error, the door of the floppy drive is not completely closed, or there is some other problem you may see the message:

Extraction error: try again? (y/n)

Enter:

y

and press RETURN.

5. When the last of the "N" volumes you are prompted for is read, you see the message:

Operating system serialization.

Enter your serial number
and press <RETURN>

Enter the serial number exactly as it is shown on your Serialization Card and press RETURN. Then you see the message:

Enter your activation key
and press <RETURN>

Enter the activation key exactly as it is shown on your Serialization Card and press RETURN.

6. Next you are prompted to enter the "B" series of floppies. You see screen prompts like those for the "N" floppies.

When the last of the "B" floppies are installed, you see:

Does daylight savings time apply at your location? (y/n)

If daylight savings/standard time changes occur in your area, enter 'y.' If not, enter 'n.' After you press RETURN, you see:

Are you in North America? (y/n)

If you enter 'y,' you see:

1. AST – Atlantic Standard Time
2. EST – Eastern Standard Time
3. CST – Central Standard Time
4. MST – Mountain Standard Time
5. PST – Pacific Standard Time
6. YST – Yukon Standard Time
7. HST – Hawaiian/Alaskan Standard Time
8. NST – Nome Standard Time

Enter the number that represents your timezone:

If, for example, your timezone is Nome Standard time, you would enter the number '8' and press RETURN.

If you are not in the United States (or one of the time zones represented above), and entered "n", the following is displayed:

What is the standard abbreviation of your timezone? (3 capital letters)

Type three upper case letters which represent your time zone and press RETURN. Next you will see this message:

How many hours west of Greenwich Mean Time are you?

Answer with a number between –23 and 23, then press RETURN. Do not use fractions.

The time zone variable, TZ, in the file /etc/default/login is changed accordingly. Your time zone is now set. There is no need to change the .profile for a user, unless they call in from a different time zone, and want to override the local standard.

You have now installed the minimal XENIX system, or run time system. You can use many of the standard XENIX utilities, or install other applications packages.

You see another menu which gives you the option of stopping or continuing with the installation. You can, at this point, stop the installation, or you can continue to install the XENIX Operating System in the next section, *Installing the XENIX Distribution*.

2.5.6 Installing the XENIX Distribution

You can now install more of the XENIX Operating System. With the custom(C) program you can selectively extract files from the distribution set to create your own custom XENIX system. You see information about your filesystem(s), including the number of blocks currently used. You also see this menu:

    1. Stop installation
    2. Continue installation

If you want to install all or part of the Operating System, enter option '2' and press RETURN.

Note that the entire XENIX distribution, including the Development System and Text Processing System requires more than 10M bytes of disk space.

If you choose option '2,' you are prompted for a set to install (customize). Choose from Operating System, Development System, and Text Processing System. If you do not select a system to "customize", by choosing the 'q' option, you stop installation procedure. You will need to use custom(C) to add more of XENIX.

The custom program prompts for the necessary volume numbers. Insert the appropriate floppies and follow the screen prompts. For information on installing portions of the Operating System, see the XENIX *Reference* section on custom(C).

You can install the Link Kit at this time with custom. Note that you are prompted for your serial number and activation key again. Enter them as you did earlier in the installation.

When you are finished installing XENIX, you see a message about booting the system. You then see:

    **   Normal System Shutdown **

    **   Safe to Power Off   **
            – or –
    ** Hit Any Key to Reboot **

The system shuts down. Remove any floppy that is in the drive.

Press any key to reboot the system and when you see the boot prompt:

>   Boot
>   :

press:

>   RETURN

You see:

>   hd(40,0)xenix

The screen clears and you see some self check diagnostics. You then see:

>   Type CONTROL-d to proceed with normal startup
>   (or give root password for system maintenance)

Press RETURN at this point since there is no root password. The next step is to create a password for the root account.

2.6 Creating the Super-User Password

The super-user password keeps the system safe from unauthorized use. It is important that you create a super-user password immediately after the system has been installed to ensure maximum protection of the system and prevent unnecessary use of the super-user (also known as "root") account.

It is very easy to make errors when logged in as super-user that could destroy files. Login as super-user only to install programs and to do system maintenance tasks. For a complete description of the super-user, see the XENIX *Operations Guide*.

To create the super-user password, follow these steps:

1. Enter:

   >   passwd root

   and press RETURN.

   The system displays the message:

   >   New password:

   The new password can be any sequence of letters, numbers, and/or punctuation marks, but should be at least 5 characters long.

2. Enter the new password and press RETURN.

    The system does not display the password as you enter so enter carefully. After you press RETURN the system displays the message:

    Retype new password:

3. Enter the new password once more and press RETURN. Make sure you enter it correctly, otherwise the program will ignore the change.

The super–user password is now in place. From now on, the password is required whenever you attempt to access the system as super–user.

Do not forget the super–user password. To restore a forgotten super–user password you must reinstall the XENIX system. If necessary, keep a copy of the super–user password in a safe place.

2.6.1 Sysinfo Account

There is a special account used to perform system backups. The "sysinfo" account is set up with permissions and privileges similar to the super–user account, but only for performing system backups. See the chapter "Backing Up File Systems" in the XENIX *Operations Guide* for more on this procedure.

We suggest you create a password for the "sysinfo" account when you create the password for the super–user account "root".

2.7 Creating the First User Account

The last step in the installation is to create the system's first user account, "guest". This guest account is a temporary workspace on the system that you may use to practice with the XENIX system. Later, after installation is complete and you are familiar with the XENIX commands, you can remove the guest account and create private accounts for all the system users.

To create the first user account, follow these steps:

1. Enter:

   mkuser

   and press RETURN. The system displays the message:

   Mkuser
   Add a user to the system

   Do you require detailed instructions? (y/n):

   Enter:

   n

   and press RETURN (you can examine the instructions at some other time). You can quit from the program at any "(y/n)" prompt by entering the letter 'q' and pressing RETURN.

2. The system prompts for more information:

   Enter new user's login name:

   Enter:

   guest

   and press RETURN. The name "guest" is now the login name for the new user account.

3. Next, the program prompts for a group name:

   Do you want to use the default group? (y/n)?

   Enter:

   y

   This sets the group to "group".

4. Next, the program prompts for the new user's password.

   Enter password:

   Press RETURN. This allows you to use the guest account without giving a password.

5. Next, the program prompts for the shell type. The following displays:

> Please specify the type of shell (command interpreter)
> this user requires. You can type 1, 2, 3, 4, or 5 as follows:
>
> 1 Standard (Bourne) Shell.
> 2 Visual Shell.
> 3 C Shell.
> 4 Restricted Shell.
> 5 Uucp.

Enter "1" and press ENTER. The guest account has an sh(C) shell.

6. Finally, the program prompts you for comments:

> Please Enter Comment   >..........................
>   >

Enter:

> guest account

and press RETURN.

7. The system then prompts if you want to change anything. Enter:

> n

and press RETURN.

8. Finally, you see the prompt:

> Do you want to add another user? (y/n)

Enter:

> n

and press RETURN.

The new guest account is ready. Later, when you turn to the XENIX *User's Guide*, you may use this account to, for instance, practice logging in, make directories and run programs.

2.8 The Next Step

If you created a /u filesystem earlier in the installation, you should now run
this command:

    mkdev fs /dev/u /u

Of course, if you chose a name other than *u* for the second filesystem, use
that name in the command line above.

If you are familiar with the XENIX Operating System, you may continue
with normal startup and begin working. Just press down the CONTROL
key and enter "d". Refer to the explanation of normal startup in the
XENIX *Operations Guide* if you have problems.

If you are not familiar with the XENIX Operating System, we recommend
that you halt the system and turn to the XENIX *User's Guide* and the XENIX
Operations Guide to learn how to start the system, how to log in, and how to
run programs.

To halt the system, follow these steps:

1. Enter:

        /etc/shutdown 0

    and press RETURN.

2. Wait for the following message:

        ** Normal System Shutdown **

        **   Safe to Power Off   **
                    – or –
        ** Hit Any Key to Reboot **

3. When you see the shutdown message, it is safe to turn off the power
    to the computer.

2.9 Troubleshooting

Sometimes things can go wrong in the installation procedure. Most often,
there is no problem with the software or the procedure itself. Occasionally
there is a problem with the hardware, but most are minor, such as improp-
erly connected cables.

You can avoid most simple errors by reading the *Release Notes* delivered with this product, and this *Installation Guide* completely before you try to install the software.

During the installation procedure, don't assume you know what is about to happen, even if you have installed the XENIX system before. Use the documentation wisely.

If you have difficulty installing the software, here is a list of some of the most common problems, how to avoid them, and how to fix them if they happen:

- *Some hardware* (for example, a disk drive) *doesn't seem to work, although it works fine under another operating system.*

  Certain hardware configurations do not work with XENIX. Refer to the "Compatible Hardware" section in the *Release Notes* for information on what hardware you can use with XENIX.

- *XENIX is installed after DOS, now both operating systems do not work.*

  You may want to back up your DOS files, install DOS and install XENIX. For details on this, see Chapter 3 in this *Installation Guide*, "Using DOS And XENIX On The Same Disk."

- *Error reading a floppy.*

  Make sure the correct floppy is in the drive and it is inserted correctly (see your owner's manual if you do not know how insert the floppy correctly).

  Make sure the floppy drive door is closed after you insert a floppy.

  If you are sure the proper floppy is inserted correctly, and you still have a read error, try tapping the floppy lightly against a hard surface, such as a table top. Be careful not to damage the media, though!

- *The system does not boot from the BOOT floppy.*

  Make sure you insert the BOOT floppy. If you insert another floppy instead, you do not see an error message, but the system still does not boot.

  The BOOT floppy is shipped with a write protect tab so that you do not accidentally erase it during the installation process. If you erase or damage the BOOT floppy, and you have not made a backup copy, call the SoftCare Support Center number to arrange for a new BOOT floppy.

● *The system won't boot from the hard disk*

You may see a message such as:

    panic: iinit

or another kind of error message. Sometimes this happens because you did not run a bad track scan during installation, and the boot block was written on a bad track.

Whatever the reason, you must reinstall the XENIX system. If you didn't enter all the flaws furnished on a flaw map, do so this time.

If XENIX still won't boot, run your system's and disk's hardware diagnostics.

● *You forget to enter more bad tracks from a manufacturer furnished flaw map.*

You can add more flaw locations to the bad track map any time you are in System Maintenance mode. Follow these steps if you are still in the installation procedure:

- Finish installing the run time system.

- When you are prompted to continue installing, or stop the installation process, stop the installation process.

- Enter system maintenance mode.

- Run badtrk to add the new flaws.

- Salvage any data (when prompted under badtrk).

- Run the custom utility to finish installing your system.

Chapter 3

Using DOS and XENIX

On the Same Disk

3.1 Introduction

Many users received the MS-DOS, or other closely compatible DOS, operating system with their computer. This chapter explains how you can still use DOS utilities, files, and applications after you install the XENIX operating system. You can even access DOS files and directories from XENIX. You do not need to throw away your investment in DOS software, or buy another computer just to run XENIX.

Several programs make this possible. The dos(C) utilities allow access to DOS files on diskettes or on the DOS partition on the hard disk. These utilities are discussed later in this chapter. The utility which partitions the disk is called fdisk(C) and is available in DOS and XENIX versions. The next section explains how to use fdisk to run DOS and XENIX on the same hard disk. Another section discusses installing XENIX on the hard disk along with DOS. There is also a section explaining various booting configurations, for users who mostly use XENIX and for users who mostly use DOS.

3.2 Partitioning the Hard Disk Using fdisk

.Each version of fdisk is documented in the respective operating system's manual. fdisk(C) is found in the XENIX *Reference* and, unless otherwise noted, this chapter refers to the XENIX fdisk.

fdisk is interactive, using a menu to display your options. When you exit fdisk, the utility asks you whether or not you really want to make the specified changes. This feature lessens the chance of making a mistake. Here is an example fdisk menu:

> 1. Display Partition Table
> 2. Use Entire Disk For
> 3. Create XENIX Partition
> 4. Activate Partition
> 5. Delete XENIX Partition

> Please enter your choice:

The fdisk utility allows you to set up separate areas (partitions) on your hard disk for your operating system. The hard disk is divided into *tracks*. The number of tracks depends upon the size of the hard disk and the number of heads in the hard disk drive.

A *partition* consists of a group of tracks. One hard disk may contain up to four partitions. Each partition can have a different operating system and associated directories and files. Not all operating systems can be used with fdisk.

The fdisk command allows you to specify which partition is "active". This means that when you turn on (boot) your computer, the operating system installed in the active partition will start running. The XENIX partition must be active when you intend to use the XENIX operating system.

The fdisk command allows you to specify the number of tracks used by the partition. This will vary according to the size of your hard disk. We recommend using at least a 10 megabyte hard disk to run XENIX. The size of the XENIX partition also depends on the number of software packages you want to install. Refer to the custom(C) manual page for information on the installing and removing packages from the three XENIX distribution Systems. 6 megabytes is a good starting point. You can install the XENIX Operating System package in this space, and have space for user files.

The fdisk command allows you to specify where the partition begins. fdisk will not allow you to construct overlapping partitions, or a partition that begins with a bad track. You do not need to install XENIX in the first partition. When you are running XENIX, the device name of the partition running XENIX is /dev/hd0a.

One option of fdisk tabulates the current state of the partitions (the Display Partition Table option). This option lists, for each partition, whether the partition is active, the first track, the last track, the number of tracks used, and the associated operating system. If you enter the Display Partition Table option and press RETURN to see the partition table, the result may look like this:

PARTITION	STATUS	TYPE	START	END	SIZE
1	A	XENIX	001	800	800
2	N	DOS	801	1219	420

There are two ways to switch operating systems once you have set up separate XENIX and DOS partitions:

- Use a floppy diskette with the files necessary to boot the DOS operating system

- Use fdisk to change the current active partition.

If you change operating systems frequently, you should use a bootable DOS diskette to switch between DOS and XENIX. Follow this procedure:

1. Make sure all users are logged off XENIX.

2. Run shutdown(C) to shutdown the XENIX system. This command makes sure all users know the system is being shutdown, terminates all processes, then halts the system.

3. Once XENIX has shutdown, insert the bootable DOS diskette into the primary (boot) drive.

4. Boot DOS.

5. To get back to XENIX, remove any disks from the floppy drive(s) and press Ctrl<ALT><DEL> (or turn the computer off then on). Since the XENIX partition is still active, the XENIX operating boots.

We recommend that you use a boot floppy to boot the DOS operating system. Booting from a floppy is generally easier, faster and safer than constantly using fdisk to change active partitions.

The other way to change operating systems is to run fdisk and change the active partition from XENIX to DOS. Then, after you shutdown XENIX (see the previous steps) DOS boots from the hard disk. You do not need a bootable DOS floppy disk.

To switch back to XENIX, run fdisk under DOS and make the XENIX partition active. Then press Ctrl<ALT><DEL> (or turn the computer off, then on) to reboot XENIX.

Because the XENIX partition must be active for XENIX to operate, you cannot use a bootable floppy to boot XENIX. This second method is appropriate for an occasional change of the active operating system.

The following hard disk devices:

```
/dev/hd0d
/dev/rhd0d
/dev/hd1d
/dev/rhd1d
```

are similar to */dev/hd0a* in that the disk driver determines which partition is the DOS partition and uses that as *hd?d*. This means that software using the DOS partition does not need to know which partition is DOS (the disk driver determines that).

Remember that if you have an active XENIX partition and boot DOS from a floppy you can transfer to C: to work with the DOS files.

3.3 Installing XENIX on a DOS System

If you wish to set up XENIX on a hard disk which previously contained only DOS, follow these steps:

1. Copy (back up) all the DOS files and directories on the hard disk onto floppies, or whatever backup media you wish to use.

2. Run fdisk, under DOS. Delete the DOS partition, then recreate it, leaving enough room on the disk for XENIX. Allow at least 6 megabytes for XENIX.

3. Return the DOS files to the hard disk from the backup media. Keep the backups, though, just in case there is an error of some kind. That way you will not lose any data.

4. Turn off your computer.

5. Follow the installation procedure outlined in Chapter 2 of this guide to install XENIX.

   You will see a message warning that the contents of the hard disk will be destroyed. Don't worry, you backed up the DOS files and have transferred them to the new DOS partition. This partition will contain XENIX.

6. During the installation procedure fdisk is invoked to partition the hard disk. Use fdisk to assign a partition which is at least 6 megabytes to XENIX.

7. Designate "XENIX" as the active operating system.

8. Finish installing the XENIX operating system.

Note

Under XENIX, fdisk DOS partitions display as *DOS* while under DOS, fdisk displays XENIX partitions as *Other*.

You can only create DOS partitions using DOS fdisk, and only XENIX partitions using XENIX fdisk.

Be aware that DOS fdisk reports the size of the hard disk in terms of cylinders.

3.4 Using XENIX and DOS With Two Hard Disks

Your computer always boots the operating system in the active partition on the first hard disk. XENIX must boot from the first hard disk. There are several ways to configure your system if you have two hard disks. Two ways are discussed here.

One configuration consists of designating the entire first disk as a XENIX partition. You then use a DOS boot floppy to start DOS and specify:

    A> A: D:

to switch to the DOS area on the second hard disk, where D is the designation for the second hard disk.

Another method is to maintain a small DOS partition on the first hard disk. The DOS partition is designated the active partition. In this configuration, the computer always boots DOS. This requires changing the active partition to boot the XENIX operating system.

Note

> Be sure to make a backup copy of your boot floppies if you use them to boot your secondary operating system.

3.5 Removing An Operating System From the Hard Disk

You may find that you no longer need one of the operating systems installed on your hard disk. If you want to delete an operating system, use **fdisk** under both operating systems to delete the partition in question. Deleting the partition removes the contents of that partition and leaves unallocated space.

You can then reallocate that space by either adding another XENIX or DOS partition, or enlarging an existing partition. Enlarging a partition requires reinstalling the operating system and (for a XENIX partition) remaking the filesystem on the partition using **mkfs**(C). Refer to Chapter 7, "Using Peripheral Devices," of the XENIX *Operations Guide* if you add a second XENIX partition and want to designate this partition as a mounted filesystem.

3.6 DOS Accessing Utilities

There is a set of other utility programs which help you bridge the two operating systems. These are the XENIX commands, such as **dosls** and **doscat**, described in the XENIX manual page **dos**(C). These programs allow you to access DOS files and directories which reside in a non-active DOS partition while running XENIX.

Note that you must have a bootable, although not active DOS partition on the hard disk in order to use these XENIX commands.

You can list, copy, move and view the contents of files, and create directories. You may also be able to use the XENIX dd(C) and diskcp(C) commands to copy and compare DOS floppies. The XENIX dtype(C) command tells you what type of floppies you have (various DOS and XENIX types).

Also, the file /etc/default/msdos describes which DOS file systems (e.g. A:, B:, C: ...) correspond to which XENIX devices.

.Note

You can not execute (run) DOS programs or applications under XENIX.

The XENIX Development System, with the cmerge compiler, has the capability of using the XENIX System to create and compile programs which can be run under DOS operating systems. Refer to the XENIX C User's Guide appendix entitled "XENIX to MS-DOS: A Cross Development System" and the C Library Guide Appendix entitled "A Common Library for XENIX and MS-DOS" for more on using XENIX to create DOS programs.

Chapter 4

Installing Device Drivers

4.1 Introduction

This chapter explains how to install device drivers in order to support additional peripherals. It describes how to use the XENIX facilities to install new device driver modules.

Once you have a device driver object module, it is necessary to relink the XENIX kernel so that it refers to the new device driver. Use the Link Kit to link the new device driver to the XENIX kernel. The Link Kit is included with the XENIX Operating System for both driver writers and those who acquire a device driver they wish to incorporate into the kernel.

The tools necessary to write and compile a device driver are included with the XENIX Development System. Driver writers should read Chapter 8, "Writing Device Drivers" of the *C User's Guide*. Example device drivers are in Chapter 9, "Sample Device Drivers" of the *C User's Guide*.

This chapter is sufficient for anyone who wants to install an existing device driver.

4.1.1 What is a XENIX Device Driver?

For each peripheral device in a XENIX system, there must be a "device driver" to provide the software interface between the device and the system. A XENIX device driver is a set of routines that communicates with a hardware device, and provides a means by which XENIX can control the device in order to perform Input/Output (I/O) operations.

4.1.2 Why Do You Install A Device Driver?

A device driver will normally be supplied as a single software module and one or more configuration files, all of which must be installed on the XENIX System before the device can be used. The installation of this software is as necessary an operation as the actual hardware installation. It must be completed before the device can be used.

4.1.3 What You Need To Know

In order to install a new device driver you should:

- First install the hardware device on your system according to the manufacturer's instructions.

- Be able to edit data files using one of the XENIX text editors.

- Install the Link Kit on your system.

The exact instructions for installing a new device driver are different for each type of device. This chapter contains example commands that may be slightly different than those you actually use. Read the specific installation instructions that are provided with the device driver software.

Note that the number sign (#) that preceeds example commands is the super-user prompt. You do not type the number sign. Rather, this indicates, in the example, that you should be logged in as the super-user, or in single user mode, when you use that command.

4.2 Installing Device Drivers

The examples assume that you have installed the hardware on your system according to the manufacturer's instructions and that you now wish to install the software so you can use the new peripheral devices.

In order to install the device driver for a new peripheral you must boot the system and enter system maintenance mode. All the operations described as part of the installation process are carried out in this mode.

4.2.1 Where The Software Is Installed

First, make sure the Link Kit is installed. If it is not already installed, use the custom(C) command, described in the XENIX *Reference Manual*.

Some software vendors may provide automatic driver installation utilities compatible with the standard XENIX System V installation utilities. If so, insert the vendor's floppy in the floppy drive and enter:

    # custom

Select the option to add a supported product, and follow the instructions that appear on your screen. custom should run any XENIX System V compatible, automatic installation software provided with the driver. This will properly install the new device driver software and link a new version of the XENIX kernel including the new device driver.

If you cannot install the software with custom, you may be able to use the install program. Consult the release notes furnished with your software.

All drivers may not be provided with such utilities. In these cases, follow the detailed instructions in Section 4.2.2 "Installing Preconfigured Device Drivers" and Section 4.2.3 "Installing Non-Preconfigured Device Drivers."

Device drivers have a directory, */usr/sys/conf*, reserved for their use. It contains the software modules which comprise the installable device drivers, together with the *master* and *xenixconf* files which describe the configuration of your system.

In addition to the files in the */usr/sys/conf* directory you need to add new files to the */dev* directory.

4.2.2 Installing Preconfigured Drivers

Even if an installation script is not provided with your driver, driver installation can be quite straightforward in two cases:

- You want to install devices drivers from a single vendor, or

- All, or all but one, of the drivers you want to install are of the preconfigured type. You can tell if the driver you received is preconfigured by listing the files on the distribution media. Use the
- tar(C) command. If the driver is preconfigured, there will not be a *c.o* or *master* file.

If you are installing two non-preconfigured drivers from two different vendors, you must have the XENIX *Development System*. This procedure is discussed in section 4.2.3.

The following steps show how to link a device driver into the kernel for the above two cases. Note that the examples assume the new driver is on a floppy disk or disks:

1. First, install the Link Kit. To save disk space, you should only install the Link Kit when you intend to use it, then remove the files when you are finished. Remember to save any changes you have made before removing the files. Use the custom(C) utility to install or remove the Link Kit at any time.

   Enter:

   # custom

   See the XENIX *Reference Manual* for more information on using custom.

2. Change directories to */usr/sys/conf*:

   # cd /usr/sys/conf

3. Extract the contents of the floppies containing the object modules with this command:

   # tar xvf /dev/install

4. Edit the file *link_xenix* to include the names of any object files provided. The object files are the files on your distribution media whose names end in ".o", as in *tape.o*. Add the names of any new modules to the ld command line, just before the pairs of arguments of the form "-l lib_xxxx".

5. Enter

   # ./link_xenix

   Note that linking takes a while. Once you have a new XENIX kernel, proceed to section 4.2.4, "Creating Special Device Files."

4.2.3 Installing Non-Preconfigured Drivers

This section explains how to install two or more non-preconfigured drivers into your system. You need the XENIX development system, and, specifically, you may wish to refer to Chapter 8, "Writing Device Drivers" in the *C User's Guide*. Note that the examples assume you have the new driver on a floppy disk or disks:

1. First, install the Link Kit. To save disk space, you should only install the Link Kit when you intend to use it, then remove the files when you are finished. Use the custom(C) utility to install or remove the Link Kit at any time.

2. Change directories to */usr/sys/conf*:

   # cd /usr/sys/conf

   Back up the original *master* and *xenixconf* files for later reference. Use any of the standard backup or archive utilities, such as tar(C).

3. For each vendor's drivers that you want to configure:

   - Extract the files from the distribution media. If they are in tar format, for example, use this command:

     # tar xvf /dev/rfd0

- Rename the *master, xenixconf, c.c* (if included) and *c.o* files. To install a tape driver, for instance, move *c.o* to *c.tp.o*, and *master* to *master.tp*. Do the same with any makefiles and installation scripts, if present.

- Use diff(C) on each pair of *master* files. Most drivers require adding only a single line to *master*, but some devices, such as networks, are actually implemented as multiple drivers.

Examine the block and character device number columns (bmaj and cmaj) and the interrupt vector numbers (vec1 through vec4) on the lines that differ. Note that a "0" in any of these fields, for all practical purposes, means that the field is not used and therefore does not collide with anything. If all three sets of numbers are different in each file, proceed to step 3.

Otherwise, follow these rules for resolving the clashes:

- If an existing device has the same major device number as that given for the new device, then simply choose a new, unique number for the new device and use that as the major device number. This rule applies to both the block and character major device fields. Note that if you have to change the major device number from that supplied with your installation instructions, then you must use the new number when creating special files described in a later section.

- If a driver has both a block device number and a character device number, try to use the same major number for both of them. The vector numbers are more closely tied to actual hardware vectors, and so can only be reconfigured to the extent that the hardware is configurable. If there is a conflict, check the manual for your peripheral controller to determine the devices on which it is able to interrupt, and jumper it to a unique vector number, if possible.

- Combine the multiple *master* files into one. Using a text editor, create a file named *master* that contains the salient lines from both new *master* files, as well as the original. Similarly, create a combined *xenixconf* file with an entry for each device present.

- Edit the makefile to include the names of any object files provided. The object files are the files on your driver diskette whose names end in ".o", as in *tape.o*. Add the names of any new modules to the ld command line, just before the pairs of arguments of the form "-l lib_xxxx".

- Enter:

    make

make automatically constructs a new *c.c* configuration file from the new combined *master* file. If everything has been assembled correctly, the linker produces a new *xenix*, and you can proceed to the next section.

– If you get errors complaining about invalid object modules, use the ranlib(CP) utility on all of other libraries that the kernel accesses. The additional libraries are all contained on the Link Kit, and all have names containing the string "lib". Start at */usr/sys* and look for these, and for each, type:

> # ranlib *libraryname*

If the loader runs out of kernel data, you can reduce the size of some of the other kernel data structures. See Chapter 8, "Writing Device Drivers" in the *C User's Reference* for more information.

4.2.4 Creating Special Device Files

In order for programs to gain access to the newly installed devices they must also exist as files within the filesystem. These files are termed *special files* and are generally all located in the */dev* directory. Once again, the specific installation instructions supplied with the device will give the precise details of the name to be used for the *special file* and the other parameters associated with it. In order to create a *special file* you use the mknod command. You must supply the name of the special file, its type (which can be either a *block* device or a *character* device) and the *major* and *minor* device numbers associated with the device. For example, change directories to */dev* and enter a command similar to one of these:

> # /etc/mknod hcd0 b 1 0
> # /etc/mknod rhcd0 c 1 0
> # /etc/mknod hqp c 7 0

Notice the standard XENIX convention for setting up the disk device names. You can append a digit to the mnemonic to indicate the drive number. The "raw" device, or *character special* device, name has an "r" prefix.

You can find the major device number of your device, if not otherwise given, by looking in the "master" file. Find the line in this file for the device you are configuring. For example, our hypothetical tape driver might be called "tape" at the beginning of the line, and "td" somewhat further down the same line. The name of the driver should also correspond to the name of the object module. For example, *tape.o* should be called "tape" inside the master file.

Next, find the columns at the top of the file marked "bmaj" and "cmaj". Index down these two columns until you see the line that describes your driver. Write down the block major device number (bmaj), and the character major device number (cmaj). If either bmaj or cmaj is "0", do not create any block or character nodes, respectively. Otherwise, these entries are the major device numbers for your driver.

4.2.5 How To Boot The System

Test the new kernel before installing it as */xenix*. To do so, enter the following:

```
# cp /usr/sys/conf/xenix /xenix.new
# /etc/shutdown
```

The system now reboots. You see the boot prompt:

```
Boot
:
```

If you press the *RETURN* key, or simply doing nothing, the default operating system image */xenix* is loaded and started. In order to test the newly installed device drivers, enter the name of the new kernel at the boot prompt:

```
xenix.new
```

and press RETURN. The system is now running with the "new" kernel. Test the various devices (especially the one(s) added).

Be aware that when you use an alternate kernel **ps(C)** does not work correctly unless you specify the - n flag and the pathname of the alternate *xenix* kernel. For example:

```
ps -n /xenix.new
```

When you switch to a new kernel, remove */usr/adm/messages* before switching to multi-user mode.

Note

Do not install *xenix* on the hard disk as */xenix* until it is fully tested.

4.2.6 Creating A New /xenix

When the kernel is satisfactory, install the new kernel on the hard disk. Enter the following:

```
# cd  /usr/sys/conf
# ./hdinstall
```

hdinstall(C) backs up the "old" /xenix and copies /usr/sys/conf/xenix to /xenix.

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